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Physical Therapy Awareness and Referral Patterns of Physicians in Wyoming

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PHYSICAL THERAPY AWARENESS AND REFERRAL PATTERNS OF PHYSICIANS IN WYOMING

by

Gavin Green
Bachelor of Science in Physical Therapy
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An Independent Study

Submitted to the Graduate Faculty of the

Department of Physical Therapy

School of Medicine

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Physical Therapy

Grand Forks, North Dakota
May
1998

This Independent Study, submitted by Gavin Green in partial fulfillment of requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

Renee Mabrey
(Faculty Preceptor)

Renee Mabrey
(Graduate School Advisor)

Thomas Mon
(Chairperson, Physical Therapy)

PERMISSION

Title Physical Therapy Awareness and Referral Patterns of Physicians in Wyoming

Department Physical Therapy

Degree Master of Physical Therapy

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Date 12-17-97

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ABSTRACT

The purpose of this study is to assess physicians' knowledge of and referral patterns for physical therapy. A questionnaire was developed using the scientific literature base as well as input from physical therapy faculty and practicing physicians. Subjects included Wyoming physicians from five specialty areas. Results were analyzed according to descriptive and analytical statistics and were shared with University of North Dakota faculty and the Wyoming chapter of the American Physical Therapy Association.

Results suggest that physicians as a group are unaware of a significant number of physical therapy services. This study further demonstrated that physicians with better knowledge of physical therapy are apt to refer more patients to physical therapy. Finally, it was shown that physicians are receptive to learning more about physical therapy, especially by way of inservices.

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Recent trends in healthcare, such as patient focused care and continuous quality improvement, have reinforced the idea that interdisciplinary teams are essential to quality patient care. In order for an interdisciplinary team to function at its optimal level, there are two requirements: (1) there must be a professional relationship between team members and (2) there must be a solid understanding of the role each member plays. This latter concept will be the focus of this paper. Specifically, I will examine physicians' awareness of the physical therapy profession. Physicians' awareness of physical therapy is of particular importance due to the fact that physicians' orders are generally required for physical therapy to be implemented.

Physician Awareness of Physical Therapy

Physician awareness of physical therapy has not been widely studied. However, Uili et al[1] found that physicians are most familiar with the technical aspects of physical therapy; for example, the use of modalities, range of motion exercises, and crutch walking instruction. This study revealed that physicians are less aware of physical therapists' more professional skills, such as isokinetic evaluation, biofeedback, and Proprioceptive Neuromuscular Facilitation. Furthermore, it was shown that physicians tend to prefer to prescribe specific

physical therapy procedures rather than leave it to the therapist to evaluate and treat the patient as he or she sees fit.

Referral Patterns of Physical Therapy

Quality patient care with respect to physical therapy is not only related to a working relationship between physicians and physical therapists, but also to appropriate referral patterns. Examination of referral patterns may also help to shed light on physicians' understanding of physical therapy.

Physicians' referral rates of physical therapy have been shown to vary greatly.[1,2,3] An understanding of the factors affecting referral rates could serve to improve the professional relationship between physicians and physical therapists and in turn improve the overall function of the healthcare team. Several studies have attempted to determine the rationale behind physicians' referrals to physical therapy.

Kerssens and Groenewegen[2] studied the relationship between the physical therapy referral rate of general practitioners and the types of patients referred. The results of this study showed there was no significant difference in the referral indications between high referring general practitioners and those who referred less frequently. This suggests that high referring general practitioners are not referring for a broader range of diagnoses. Therefore, there must be some other factor responsible for their increased rate of referral to physical therapy. Significant differences between high and low referring physicians were found in three areas possibly explaining the difference in referral rates. The high referring physicians were shown to have the following traits in

common: they had busier practices, closer relations with physical therapists, and viewed their physical therapy knowledge as more satisfactory than their low referring colleagues.[3]

One might expect that medical specialists would be more systematic than general practitioners in their referral to physical therapy. Ward et al[3] looked at the physical therapy referral rates of orthopedic surgeons as well as the indications for referral. It was found that 29% of the patients seen by a group of 18 surgeons received physical therapy. The referral rates of individual surgeons varied greatly with anywhere from 15% to 56% of patients being referred to physical therapists. Interestingly, even among orthopedic specialists, there were no correlations found between patient diagnoses and the variations in physicians' referral rates.

Perhaps this variance in referral indications is a result of physicians' less than complete understanding of the role a physical therapist can play in rehabilitation. In a 1984 study, Uili et al[1] looked at physician knowledge and utilization of physical therapy procedures by administering a test covering general and specific physical therapy procedures to different medical specialists. He found that Physical Medicine and Rehabilitation specialists had the most knowledge of physical therapy followed by orthopedists and finally neurologists. Uili[1] also found that physicians with a higher overall knowledge of physical therapy referred significantly more patients to physical therapy.

Summary of the Literature

After reviewing the literature, a major area of concern becomes apparent. It seems that variations in referral rates among physicians are not related to clinical indications. This seems to suggest a lack of understanding among physicians as to when and why they utilize physical therapy. While this finding seems to paint a gloomy picture for physical therapy, there is reason for optimism. Physicians who know more about physical therapy tend to make more referrals. This suggests that physicians with more knowledge of physical therapy place more value on physical therapy. Presumably, physicians who find physical therapy valuable will feel that communication with physical therapists is important. Furthermore, increased physician-therapist interaction should improve physicians' opinions of the professional status of physical therapists resulting in increased use of physical therapy and improved patient care.

It would seem that the solution is obvious: increase physician knowledge of physical therapy and physicians' opinions of therapists will improve, physical therapy referrals will be more appropriate, and the interdisciplinary healthcare team will operate more effectively. If this could be accomplished, it would be an all-win situation. The physicians would have additional means of healing their patients, the physical therapists would be able to apply their skills more often, and above all the patients would have improved quality of care. Before physician education is targeted for change, however, it is necessary to identify physicians' levels of awareness with regard to physical therapy as well as specific areas of

physical therapy which are less understood and underutilized. The major aim of this study is to elucidate these topics.

Physician Awareness and Referrals of Physical Therapy in Wyoming

To narrow the scope of this study, physicians from the state of Wyoming were chosen as the target population. The research done in the past has examined the relationship between physicians and physical therapists in urban settings. The rural population distribution is one reason Wyoming physicians were chosen as a target population for this study. The rural setting may have an effect on the professional relationship between physicians and physical therapists as many practitioners are fairly isolated from their colleagues. This isolation may affect communication between physicians, thus diminishing the potential for physicians to discuss physical therapy among themselves. On the other hand, it is possible that role awareness may actually be enhanced in a rural setting as physicians may work more closely with therapists due to the smaller healthcare team. Furthermore, Wyoming does not have a medical school nor a physical therapy school, which may affect the professional knowledge dispersal between physicians and physical therapists.

Purpose of Study

This study will attempt to determine the general physical therapy awareness level of Wyoming physicians in various medical specialties and correlate this awareness level with referral patterns as well as identify particular physical therapy services used more or less frequently by physicians. Finally,

this study will begin to explore possible avenues of increasing physician knowledge of physical therapy.

CHAPTER II

METHODS

Prior to initiation of this study, a proposal was made to the Institutional Review Board of the University of North Dakota. This board protects the rights of human subjects who participate in any university related research project. Approval from the Institutional Review Board was gained before the surveys were mailed.

Subject Selection

A sample of 175 physicians throughout the state of Wyoming specializing in orthopedic surgery, pediatrics, neurology, family practice, and internal medicine was selected for study. These specialties were chosen for study as they were deemed to be the most frequent sources of physical therapy referrals in Wyoming. Physical Medicine and Rehabilitation specialists were not included in this study as there were only two of these specialists practicing in Wyoming. The Physician Directory published by the Wyoming Board of Medicine[4] was used to obtain addresses and physician specialties. Physicians were eliminated from the sample if they were not specialists in one of the five categories selected for study or if they were listed as retired. The remaining physicians were randomly sampled in an attempt to obtain a sample of 40 physicians in each specialty. Since there were only 15 neurological specialists practicing in the state of

Wyoming, it was impossible to obtain the desired sample size of 40, hence all 15 were mailed surveys.

Instrument Development

A questionnaire was constructed to determine referral frequencies to physical therapy, physician awareness and utilization of a broad spectrum of specific physical therapy services, and preferred methods of acquiring physical therapy knowledge (see Appendix A). Demographic questions were also included to determine physician specialty, number of years in practice, self rating of physical therapy knowledge, perceived physical therapy success rate with patients, time devoted to physical therapy in medical school, and percentage of current patient load receiving physical therapy.

Procedure

The questionnaire was pilot-tested to determine content validity. Ten physicians in Grand Forks, North Dakota, were asked to complete the questionnaire and provide suggestions for improving the clarity and content of the questionnaire. After questionnaire revision was completed, the questionnaire, a cover letter (see Appendix B), and a postage-paid return envelope were mailed to each of the selected physicians in Wyoming.

Data Analysis

Statistical analyses were completed by the use of the computer program, Statistical Package for the Social Sciences.[5] The data were first evaluated descriptively by summarizing the responses in terms of percentages, majorities, and means. Physicians were given an awareness score by summing the number

of physical therapy services of which each was aware. This score was then compared to specialty area by crosstabulation. Spearman's rho was used to compare the awareness score to average referrals per month. Frequency analysis was used to determine trends involving other variables.

Reporting of Results

Results were distributed to the physical therapy faculty at the University of North Dakota as well as the Wyoming chapter of the American Physical Therapy Association.

CHAPTER III

RESULTS

The results will be discussed in the following order. First, demographical data will be reported. Second, data related to physician awareness and utilization of physical therapy will be revealed. Third, referral rates and factors affecting these rates will be discussed. Fourth, information regarding the education of physicians in physical therapy will be addressed. Finally, physicians' perceptions of physical therapy outcomes will be mentioned.

Demographics

Sixty-seven of the 175 questionnaires (38%) were returned and used in the analysis. Response rates for the various physician specialties were as follows: family practice (40%), pediatrics (40%), neurology (40%), orthopedics (38%), and internal medicine (35%).

Nineteen percent of responding physicians had been in practice less than six years; 21 percent, between 6 and 10 years; 18 percent, 11 to 15 years; 16 percent, between 16 and 20 years; and 25 percent had been practicing for over 20 years.

Physician Awareness of Physical Therapy

The majority of physicians (80%) felt that they possessed either good or excellent knowledge of physical therapy. Sixteen percent of physicians rated

their knowledge of physical therapy as fair and only 3% rated themselves as having poor knowledge of physical therapy.

Examination of specific physical therapy services (Table 1) revealed that at least 90% of physicians were aware that physical therapists performed range of motion exercises, worked with stroke patients, prescribed and fitted patients with assistive devices, performed joint mobilizations, and prescribed conditioning programs. Perhaps due to this increased familiarity, these services were utilized most frequently, with more than 75% of physicians utilizing four out of the five services; developing stroke rehabilitation programs was used by 64% of physicians. Twenty-five percent of the physicians surveyed were unaware of 13 of the 26 physical therapy services mentioned. Physical therapy services of which a significant number (greater than 60%) of physicians were unaware included treating thoracic outlet syndrome, temporomandibular joint dysfunction and incontinence; developing and implementing cardiac rehabilitation programs; and using the tilt table to treat orthostatic hypotension. Not surprisingly, the procedures of which the physicians were less aware were utilized by only a small percentage of physicians (less than 31%).

Physician awareness of physical therapy services per specialty area was examined. When at least 50% of a specialist group was unaware of a particular service, that service was noted and listed under the appropriate specialist heading (Table 2).

Table 1.—Physician Awareness and Utilization of Physical Therapy Services (N = 65)

	AWARE		UTILIZE	
	frequency	percent	frequency	percent
Assess, debride, and dress wounds	50	75	37	55
Evaluate musculoskeletal problems	59	88	53	79
Mobilize hypomobile joints	64	96	59	88
Assess gait and balance disturbances	55	82	46	69
Use EMG for muscle re-education	37	55	28	42
Prescribe conditioning programs	60	90	52	78
Assess joint integrity	50	75	28	42
Apply traction	50	75	35	52
Apply TENS for pain control	55	82	46	69
Perform functional capacity evals	57	85	49	73
Fit orthoses	55	82	44	66
Design work hardening programs	51	76	36	54
Perform ROM exercises	67	100	61	91
Treat thoracic outlet syndrome	29	43	20	30
Control spasticity in MS patients	51	76	25	37
Assess tone in children	43	64	27	40
Decrease pain in RSD patients	42	63	31	46
Development programs for CVA patients	61	91	43	64
Treat incontinence	26	39	10	15
Use soft tissue mobilization	52	78	38	57
Treat TMJ	27	40	13	19
Use tilt table	22	33	13	19
Select and fit assistive devices	65	97	57	85
Apply Jobst pumps	38	57	30	45
Develop cardiac rehab programs	36	54	17	25
Use iontophoresis for inflammation	38	57	25	37

Table 2.—Physician Awareness/Limited Awareness of Physical Therapy Services, By Specialty (✓ ≥ 50% of physicians are unaware of this service)

	Family Practice	Orthopedic	Internal Medicine	Neurology	Pediatrics
Assess, debride, and dress wounds					
Evaluate musculoskeletal problems				✓	
Mobilize hypomobile joints					
Assess gait and balance					
Use EMG for muscle re-education				✓	✓
Prescribe conditioning programs					
Assess joint integrity					
Apply traction					✓
Apply TENS for pain control					✓
Perform functional capacity evals					
Fit orthoses					
Design work hardening programs					
Perform ROM exercises					
Treat thoracic outlet syndrome	✓		✓	✓	✓
Control spasticity in MS patients				✓	
Assess tone in children			✓	✓	
Decrease pain in RSD patients			✓	✓	✓
Develop programs for CVA patients					
Treat incontinence	✓	✓		✓	✓
Use soft tissue mobilization					
Treat TMJ	✓		✓	✓	✓
Use tilt table	✓		✓		✓
Select and fit assistive devices					
Apply Jobst pumps				✓	✓
Develop cardiac rehab programs				✓	
Use iontophoresis for inflammation			✓	✓	✓

Mean awareness scores were compared between specialties (Fig. 1) looking for significant differences. Orthopedists had the highest mean awareness score (22.3), followed by family practitioners (20.0), internal medicine specialists (18.4), neurology specialists (15.7), and pediatricians (15.4). One way ANOVA demonstrated a significant difference in awareness scores between physicians from different specialties [$f(4,62)=5.429$, $p<.01$, two tails]. Post hoc analysis showed the difference to occur between orthopedists and pediatricians ($p<.01$).

When specialty versus physical therapy services utilized was examined, orthopedists were found to utilize 68% of the listed services; family practitioners, 61%; internal medicine specialists, 53%; neurology specialists, 48%; and pediatricians used only 32% of the services. One way ANOVA demonstrated a significant difference in utilization scores between physicians from different specialties [$f(4,62)=8.536$, $p<.01$, two tails]. Post hoc analysis revealed that these differences were between orthopedists and pediatricians and between family practitioners and pediatricians.

Referral Rates and Relationships

Average referrals per month were compared to physician specialty and orthopedists were found to refer the most patients to physical therapy with 73% of orthopedists referring more than 20 patients per month. Pediatricians were the least likely to refer to physical therapy with 87% referring between 0 and 5 patients per month. Complete results of average referrals per month by physician specialty are depicted in Table 3.

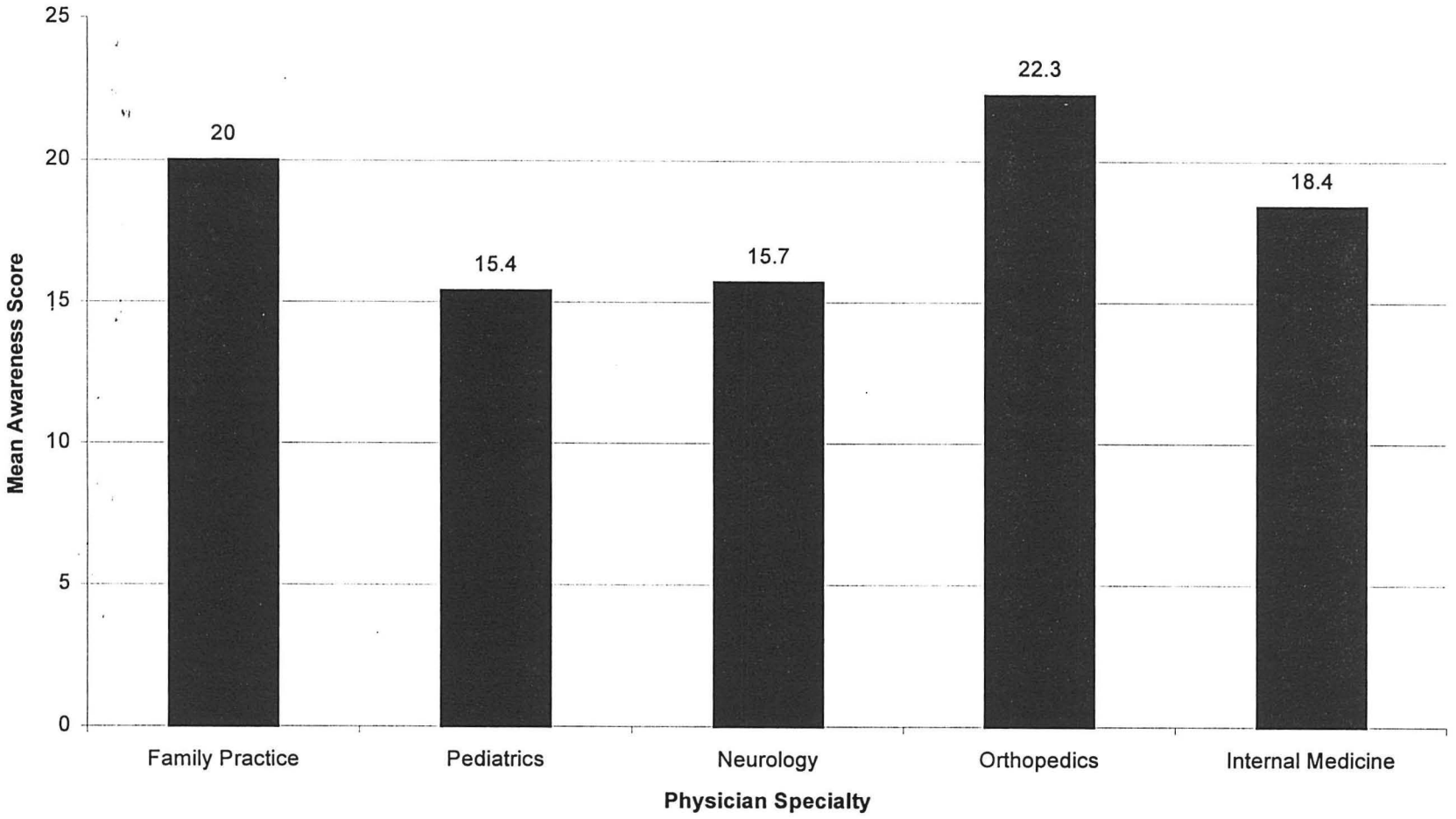

Figure 1. Mean Physical Therapy Awareness Scores of Wyoming Physicians, by Specialty Area.

Table 3.—Average Referrals per Month Compared to Physician Specialty

Area of Specialty	Average Referrals Per Month					Total
	0-5	6-10	11-15	16-20	>20	
Family Practice	7	10	9	3		29
Pediatrics	24	7			2	33
Orthopedics		1	3	4	27	35
Neurology	1	8	4	4	3	20
Internal Medicine	6	14	5	1	2	28
TOTAL	38	40	21	12	34	145

Physician self-rating of physical therapy knowledge was compared to average referrals per month, and 63% of physicians who rated their knowledge of physical therapy as excellent referred 16 or more patients per month to physical therapy. Of the physicians who rated their knowledge of physical therapy as fair or poor, 67% referred five or fewer patients per month.

Spearman's rho correlational analysis was used to determine whether or not awareness scores or physician experience levels are related to referral rates. Spearman's rho revealed a small, but significant (r_s=.359 n=65, p<.01, two tails) positive correlation between awareness scores and average number of referrals per month; however, years of experience were not found to be significantly related to referral rates (r_s= -.016, n=65, p>.05, two tails).

Modes of Educating Physicians in Physical Therapy

Forty percent of physicians revealed that no time was devoted to physical therapy in medical school. Twenty-eight percent had between one and five hours of physical therapy instruction in medical school, 9% had between 6 and 10 hours, and 16% had over 10 hours.

Thirty-six percent of responding physicians preferred in-services by physical therapists as a method of increasing their awareness of physical therapy. Nineteen percent would choose one-on-one communication as the preferred avenue for increasing their knowledge of physical therapy, while sixteen percent of physicians felt that medical school would be the best place for physical therapy instruction. Joint research and literature were not thought to be particularly effective methods of education with only 7% and 6% of physicians choosing these methods respectively.

This survey seemed to be an effective way of improving physician awareness of physical therapy services as 59% of responding physicians felt that they were informed of physical therapy services of which they were previously unaware.

Physicians' Perceptions of Physical Therapy Outcomes

The majority of physicians (69%) felt that between 51% and 75% of their patients demonstrated expected outcomes after physical therapy. Seventeen percent of the responding physicians thought that between 76% and 100% of their patients referred to physical therapy achieved expected outcomes. Only 14% of physicians felt that less than 50% of their patients receiving physical therapy displayed expected outcomes.

CHAPTER IV

DISCUSSION

Response Factors

The response rate of this survey was comparable to other surveys of professionals.[1,2,3] The response rate would presumably have been increased by the use of a postcard reminder.

Physicians' Awareness of Physical Therapy

The data suggest that there is a wide variance in physical therapy awareness between physicians of different specialties. Physician awareness of physical therapy was examined by two methods, self-rating and an awareness score based on the survey. Self-rating revealed that, in general, physicians felt themselves to have a good knowledge of physical therapy. However, upon looking at the more objective measure of awareness—the awareness score—it was found that physicians may overestimate their knowledge of physical therapy. As expected, orthopedists were found to be the most aware of physical therapy procedures, having an awareness score of 22.3 out of 26. This observation is similar to that of Uili[1] who found orthopedists to be second in physical therapy knowledge only to physical medicine and rehabilitation specialists. The specialists with the least knowledge of physical therapy were also identified. Pediatricians consistently demonstrated less knowledge of physical therapy than

their colleagues in other specialties. This may be due to the fact that physical therapy services not applicable to the pediatric population were included in the questionnaire. For example, the development of programs to enhance function in stroke patients would not be a service of which pediatricians would need to be aware except in extremely rare instances.

Perhaps of more importance was identifying the many specific services of which all physicians were least aware. The services of which physicians were least aware tended to be treatments aimed at specific diagnoses. For example, physical therapists' treatment of conditions such as reflex sympathetic dystrophy, thoracic outlet syndrome, temporomandibular joint dysfunction, incontinence, and the treatment of orthostatic hypotension were not very well known. Judging from the fact that these are very common procedures in physical therapy, it is this author's opinion that the results have shown that there is a definite need for increased physician education in the area of physical therapy.

Central to this study was the quest to illuminate factors that influence physician referral to physical therapy. Consistent with the findings of Kerssens,[2] physicians who rated their knowledge of physical therapy as higher tended to make more referrals to physical therapy. Other factors found to be related to higher referral rates were physician specialty and high physical therapy awareness scores. Years of practice were not found to affect physical therapy referral rates suggesting that physicians with varying levels of experience have similar physical therapy referral patterns.

Limitations

Limitations of this study included the small sample size which decreased the significance of the results. Clarity of the survey was another potential limitation of this study as several physicians had contradictory answers on the awareness/utilization section. Several respondents either left answers blank or filled in more than one answer per question which decreased the amount of useful data. Further limiting this study may have been the wording of items on the questionnaire. For example, when referral rates were described, one answer choice ranged from 0-5 patients per month. This could encompass physicians who never refer to physical therapy as well as those who regularly refer five patients per month, two entirely different groups. A final limitation of this study may have been the use of physical therapy jargon. For example, the term functional capacity evaluation may mean one thing to a pediatrician and quite another to an orthopedic surgeon.

Future Directions

At the time this study was being run in Wyoming, it was also being conducted in North Dakota. Results from the two studies could be compared to determine if awareness levels differ between individuals from states with or without medical and physical therapy schools. Future studies could expand on this research by examining the effect of a series of physical therapy inservices on physician understanding and referral of physical therapy.

Interdisciplinary education should be an area of prime concern to educators who can further our field by bringing medical students and physical

therapy students together by way of combining appropriate courses and participating in interdisciplinary research. Shepard et al[6] discusses ten components of a successful interdisciplinary education program. Examples of these components include utilizing educators from all health care disciplines, including student peer teaching; emphasizing clinical science; and providing short educational experiences throughout the academic career.[6] This type of interdisciplinary education has recently been instituted at the University of Arizona, where a physical therapy professor taught an elective course to 13 medical students in their second year of instruction.[7] The course included a general overview of physical therapy, but focused on evaluative and treatment skills. This type of program is exactly what is needed to enhance role understanding between physicians and physical therapists. Similar courses could be implemented in other medical schools.

CHAPTER V

CONCLUSION

The results of this study suggest that there are a significant number of physical therapy procedures which are poorly understood by physicians. This should not be a reason for despair, but a call to attention. It has also been shown that physical therapy referrals are directly related to physician awareness of physical therapy. We as physical therapists need to promote our profession and strive to improve awareness of our role on the healthcare team. Finally, this study has demonstrated that physicians are receptive to education on physical therapy especially in the form of inservices and one-on-one communication. In this day and age of increased accountability, physical therapists need to: (1) improve our credibility by expanding on the scientific basis of our profession and (2) market our profession better by increasing physician awareness of our role in healthcare.

APPENDIX A

Please answer the following questions by circling the letter corresponding with the most appropriate response.

1. Indicate the number of years you have been in practice:
   - A. 1-5
   - B. 6-10
   - C. 11-15
   - D. 16-20
   - E. >20

2. Indicate your area of specialization:
   - A. Family Practice
   - B. Pediatrics
   - C. Orthopedics
   - D. Neurology/Neurosurgery
   - E. Internal Medicine
   - F. Physical Medicine & Rehabilitation

3. How would you rate your awareness of physical therapy:
   - A. Excellent
   - B. Good
   - C. Fair
   - D. Poor
   - E. Negligible

4. How many patients per month on average do you refer to physical therapy:
   - A. 0-5
   - B. 6-10
   - C. 11-15
   - D. 16-20
   - E. >20

5. What percentage of your current patient load is receiving physical therapy:
   - A. 0-5%
   - B. 6-10%
   - C. 11-25%
   - D. 26-50%
   - E. >50%

6. Of the patients you refer to physical therapy, what percentage demonstrate your expected outcomes:
   - A. 0-25%
   - B. 26-50%
   - C. 51-75%
   - D. 76-100%

7. How much time was devoted to coverage of physical therapy at your medical school:
   - A. Not covered in school
   - B. 1-5 hours
   - C. 6-10 hours
   - D. >10 hours

8. Which avenue would be the most effective for increasing physician awareness of physical therapy services:
   - A. Inservices by physical therapists
   - B. One on one communication
   - C. Literature
   - D. Medical school
   - E. Interdisciplinary research

Please continue on the following page.

The following statements describe services provided by physical therapists. Please indicate your awareness and utilization of physical therapy by placing a check mark under the appropriate columns.

I am aware that P.T.s are ***trained*** to:		I ***utilize*** P.T.s to:
_____	1. Assess, debride and dress wounds and burns	_____
_____	2. Evaluate musculoskeletal problems	_____
_____	3. Mobilize hypomobile joints	_____
_____	4. Assess gait and balance disturbances	_____
_____	5. Use EMG equipment to aid in muscle re-education	_____
_____	6. Prescribe endurance/fitness/conditioning programs	_____
_____	7. Assess joint integrity and stability	_____
_____	8. Apply traction to patients with certain spinal dysfunctions.	_____
_____	9. Apply TENS units to aid in pain control (e.g. arthritis, OB, etc.)	_____
_____	10. Perform functional capacity evaluations	_____
_____	11. Fit patients with orthoses for various diagnoses (e.g. pes planus, foot drop, etc.)	_____
_____	12. Design and implement work hardening program	_____
_____	13. Perform active and passive range of motion exercises to prevent contractures and adhesions after surgery or trauma	_____
_____	14. Treat thoracic outlet syndrome	_____
_____	15. Help control spasticity in MS patients	_____
_____	16. Assess muscle tone in infants and children and develop programs to facilitate normal tone	_____
_____	17. Decrease pain associated with Reflex Sympathetic Dystrophy	_____
_____	18. Develop programs aimed at maximizing the functional level of CVA patients	_____
_____	19. Treat incontinence conservatively by way of strengthening pelvic floor musculature	_____
_____	20. Utilize soft tissue mobilization to decrease pain and spasm associated with various pathologies (e.g. fibromyalgia)	_____
_____	21. Treat temporomandibular joint dysfunction	_____
_____	22. Utilize the tilt table to treat orthostatic hypotension.	_____
_____	23. Aid in the selection and proper fitting of wheelchairs, walkers, crutches and other assistive devices	_____
_____	24. Apply intermittent pneumatic compression devices (Jobst) for control of edema	_____
_____	25. Develop and implement cardiac rehabilitation programs	_____
_____	26. Apply antiinflammatory agents via iontophoresis	_____

Did this survey inform you of physical therapy services you were previously unaware of that you may utilize in the future? ☐ Yes ☐ No

Thank You!

APPENDIX B

Department of Physical Therapy
University of North Dakota
501 North Colombia Road
P.O. Box 9037
Grand Forks, ND 58202-9037

Dear Doctor,

I am a physical therapy student presently attending the University of North Dakota, however, I am a resident of Wyoming and plan on returning to practice as a physical therapist in the summer of 1998. I am conducting a survey to examine physicians' physical therapy awareness and referral patterns. Your response to this questionnaire would be greatly appreciated.

I would like to assure you that your identity will remain confidential and all responses will be reported in aggregate to maintain anonymity. The results of this study will be made available to you upon request and will also be shared with the Wyoming chapter of the American Physical Therapy Association.

This study should help physicians and therapists alike by indicating areas of the physical therapy field which need to be brought to physician attention. This study will also benefit me directly by partially fulfilling the requirements of a Masters of Physical Therapy degree at the University of North Dakota. For your convenience, a stamped, self-addressed envelope has been enclosed. Please respond as soon as possible. If you have any questions or concerns I can be contacted through Renee Mabey at (701) 777-2831.

Thank you for your time and assistance.

Sincerely,

Gavin Green, S.P.T.

Enc.

APPENDIX C

REPORT OF ACTION: EXEMPT/EXPEDITED REVIEW

University of North Dakota Institutional Review Board

DATE: July 24, 1997 **PROJECT NUMBER:** IRB-9707-012

NAME: Gavin Green & Cathy McMahan **DEPARTMENT/COLLEGE:** Physical Therapy

PROJECT TITLE: Physical Therapy Knowledge and Referral Patterns of Physicians in Wyoming and North Dakota

The above referenced project was reviewed by a designated member for the University's Institutional Review Board on July 25, 1997 and the following action was taken:

☐ Project approved. **EXPEDITED REVIEW** No. _____.
Next scheduled review is on _____.

☒ Project approved. **EXEMPT CATEGORY** No. 2. No periodic review scheduled unless so stated in the Remarks Section.

☐ Project approved **PENDING** receipt of corrections/additions. These corrections/additions should be submitted to ORPD for review and approval. **This study may NOT be started UNTIL final IRB approval has been received.** (See Remarks Section for further information.)

☐ Project approval **deferred. This study may not be started until final IRB approval has been received.** (See Remarks Section for further information.)

☐ Project **denied.** (See Remarks Section for further information.)

REMARKS: Any changes in protocol or adverse occurrences in the course of the research project must be reported immediately to the IRB Chairperson or ORPD.

cc: R. Mabey, Adviser
Dean, Medical School

Signature of Designated IRB Member
UND's Institutional Review Board

July 25 1997
Date

If the proposed project (clinical medical) is to be part of a research activity funded by a Federal Agency, a special assurance statement or a completed 310 Form may be required. Contact ORPD to obtain the required documents.

(3/96)

__EXPEDITED REVIEW REQUESTED UNDER ITEM __ (NUMBER[S]) OF HHS REGULATIONS
_X_EXEMPT REVIEW REQUESTED UNDER ITEM __2__ (NUMBER[S]) OF HHS REGULATIONS

UNIVERSITY OF NORTH DAKOTA
HUMAN SUBJECTS REVIEW FORM
FOR NEW PROJECTS OR PROCEDURAL REVISIONS TO APPROVED PROJECTS INVOLVING HUMAN SUBJECTS

PRINCIPAL INVESTIGATOR: Gavin Green & Cathy McMahan **TELEPHONE:** (701) 746-9508 **DATE:** 6/22/97

ADDRESS TO WHICH NOTICE OF APPROVAL SHOULD BE SENT: 705 North 43rd Apt. #102 Grand Forks, North Dakota 58203

SCHOOL/COLLEGE: UND **DEPARTMENT:** P.T. **PROPOSED PROJECT DATES:** Summer 1997

PROJECT TITLE: Physical Therapy Knowledge and Referral Patterns of Physicians in Wyoming and North Dakota

FUNDING AGENCIES (IF APPLICABLE): N/A

TYPE OF PROJECT:

__ NEW PROJECT __ CONTINUATION __ RENEWAL __ THESIS RESEARCH _X_ STUDENT RESEARCH PROJECT
DISSERTATION OR

__ CHANGE IN PROCEDURE FOR A PREVIOUSLY APPROVED PROJECT

DISSERTATION/THESIS ADVISER, OR STUDENT ADVISER: Dr. Renee Mabey

PROPOSED PROJECT: __ INVOLVES NEW DRUGS (IND) __ INVOLVES NON-APPROVED USE OF DRUG __ INVOLVES A COOPERATING INSTITUTION

IF ANY OF YOUR SUBJECTS FALL IN ANY OF THE FOLLOWING CLASSIFICATIONS, PLEASE INDICATE THE CLASSIFICATION(S):

_ MINORS (<18 YEARS) _ PREGNANT WOMEN _ MENTALLY DISABLED _ FETUSES _ MENTALLY RETARDED

_ PRISONERS _ ABORTUSES ___ UND STUDENTS (>18 YEARS)

IF YOUR PROJECT INVOLVES ANY HUMAN TISSUE, BODY FLUIDS, PATHOLOGICAL SPECIMENS, DONATED ORGANS, FETAL MATERIAL, OR PLACENTAL MATERIALS, CHECK HERE ___

1. ABSTRACT: (LIMIT TO 200 WORDS OR LESS AND INCLUDE JUSTIFICATION OR NECESSITY FOR USING HUMAN SUBJECTS.

Recent trends in healthcare reinforce the idea that interdisciplinary teams are essential for quality patient care. Optimal team function requires respect and good communication among team members as well as a knowledge of their roles. The purpose of this study is to assess physician knowledge and referral patterns of physical therapy.

Subjects in this study will include 400 physicians of varying specialty areas from Wyoming and North Dakota. Physician knowledge and referral patterns will be assessed through a questionnaire. Results will be analyzed according to descriptive and analytical statistics, and will be shared with University of North Dakota faculty and the Wyoming chapter of the American Physical Therapy Association. This study should shed light on areas within the field of physical therapy which are poorly understood and utilized. It is our hope that with increased physician awareness more patients will have access to physical therapy services.

PLEASE NOTE: Only information pertinent to your request to utilize human subjects in your project or activity should be included on this form. Where appropriate attach sections from your proposal (if seeking outside funding).

2. PROTOCOL: (Describe procedures to which humans will be subjected. Use additional pages if necessary.)

Subjects- Approximately four hundred Wyoming and North Dakota physicians will be asked to participate in a survey. Confidentiality will be maintained by keeping the subject's responses anonymous. A listing of physician addresses and specialties will be obtained from the Directory of Medical Specialists.

Survey development- The questionnaire was developed from a review of the current literature as well as input from UND-PT faculty and local physicians by way of a pilot study. This study will address the following: 1) physician knowledge of physical therapy 2) referral rates and patterns 3) possible avenues of physician education.

Procedure- Each questionnaire will be mailed with a postage-paid return envelope. A cover letter will be included which addresses the importance of the study, assures confidentiality of responses and offers the results of the study. Subjects not responding after two weeks will be sent a postcard reminder. Return envelopes will be coded for this purpose only. All data will be reported in aggregate to insure anonymity.

3. **BENEFITS:** (Describe the benefits to the individual or society.)

This study should benefit physical therapists by illuminating the areas in their profession which are less understood by physicians who are the main referral source for physical therapists. Physicians will benefit from his study by learning more about physical therapy and by being able to voice their opinions regarding the most effective format for them to gain knowledge of physical therapy. Perhaps the most important benefit of this study is to patients, as total patient care will surely improve as the multiple disciplines involved in healthcare increase their knowledge of the roles of other healthcare providers.

4. **RISKS:** (Describe the risks to the subject and precautions that will be taken to minimize them. The concept of risk goes beyond physical risk and includes risks to the subject's dignity and self-respect, as well as psycho-logical, emotional or behavioral risk. If data are collected which could prove harmful or embarrassing to the subject if associated with him or her, then describe the methods to be used to insure the confidentiality of data obtained, including plans for final disposition or destruction, debriefing procedures, etc.)

Risks involved in this study are those which accompany any survey including confidentiality and privacy of the respondents. Confidentiality will be maintained by reporting all responses in aggregate. Questions asked in this study will be of a mainly demographic nature and will include no personal or potentially embarassing questions.

5. **CONSENT FORM:** A copy of the **CONSENT FORM** to be signed by the subject (if applicable) and/or any statement to be read to the subject should be attached to this form. If no **CONSENT FORM** is to be used, document the procedures to be used to assure that infringement upon the subject's rights will not occur.

Describe where signed consent forms will be kept and for what period of time.

Consent forms will not be utilized in this study. Each subject will receive a cover letter introducing the study and inviting their participation. Consent will be implied by completing and returning the questionnaire. Returned questionnaires will be kept at the University of North Dakota Physical Therapy Department for two years following completion of the study.

6. For **FULL IRB REVIEW** forward a signed original and thirteen (13) copies of this completed form, and where applicable, thirteen (13) copies of the proposed consent form, questionnaires, etc. and any supporting documentation to:

Office of Research & Program Development
University of North Dakota
Box 8138, University Station
Grand Forks, North Dakota 58202

On campus, mail to: Office of Research & Program Development, Box 134, or drop it off at Room 101 Twamley Hall.

For **EXEMPT** or **EXPEDITED REVIEW** forward a signed original and a copy of the consent form, questionnaires, etc. and any supporting documentation to one of the addresses above.

The policies and procedures on Use of Human Subjects of the University of North Dakota apply to all activities involving use of Human Subjects performed by personnel conducting such activities under the auspices of the University. No activities are to be initiated without prior review and approval as prescribed by the University's policies and procedures governing the use of human subjects.

SIGNATURES:

_____ **DATE:** _____
Principal Investigator

_____ **DATE:** _____
Project Director or Student Adviser

_____ **DATE:** _____
Training or Center Grant Director

(Revised 8/1992)

Department of Physical Therapy
University of North Dakota
501 North Colombia Road
P.O. Box 9037
Grand Forks, ND 58202-9037

Dear Doctor,

I am a physical therapy student presently attending the University of North Dakota, however, I am a resident of Wyoming and plan on returning to practice as a physical therapist in the summer of 1998. I am conducting a survey to examine physicians' physical therapy awareness and referral patterns. Your response to this questionnaire would be greatly appreciated.

I would like to assure you that your identity will remain confidential and all responses will be reported in aggregate to maintain anonymity. The results of this study will be made available to you upon request and will also be shared with the Wyoming chapter of the American Physical Therapy Association.

This study should help physicians and therapists alike by indicating areas of the physical therapy field which need to be brought to physician attention. This study will also benefit me directly by partially fulfilling the requirements of a Masters of Physical Therapy degree at the University of North Dakota. Please respond as soon as possible. If you have any questions or concerns I can be contacted through Renee Mabey at (701) 777-2831.

Thank you for your time and assistance.

Sincerely,

Gavin Green, S.P.T.

Enc.

Department of Physical Therapy
University of North Dakota
501 North Colombia Road
P.O. Box 9037
Grand Forks, ND 58202-9037

Dear Doctor,

I am a physical therapy student presently attending the University of North Dakota and I am conducting a survey to examine physicians' physical therapy awareness and referral patterns. Your response to this questionnaire would be greatly appreciated.

I would like to assure you that your identity will remain confidential and all responses will be reported in aggregate to maintain anonymity. The results of this study will be made available to you upon request and will also be shared with the North Dakota chapter of the American Physical Therapy Association.

This study should help physicians and therapists alike by indicating areas of the physical therapy field which need to be brought to physician attention. This study will also benefit me directly by partially fulfilling the requirements of a Masters of Physical Therapy degree at the University of North Dakota. Please respond as soon as possible. If you have any questions or concerns I can be contacted through Renee Mabey at (701) 777-2831.

Thank you for your time and assistance.

Sincerely,

Cathy McMahan, S.P.T.

Enc.

Please answer the following questions by circling the letter corresponding with the most appropriate response.

1. Indicate the number of years you have been in practice:
   - A. 1-5
   - B. 6-10
   - C. 11-15
   - D. 16-20
   - E. >20

2. Indicate your area of specialization:
   - A. Family Practice
   - B. Pediatrics
   - C. Orthopedics
   - D. Neurology/Neurosurgery
   - E. Internal Medicine
   - F. Physical Medicine & Rehabilitation

3. How would you rate your awareness of physical therapy:
   - A. Excellent
   - B. Good
   - C. Fair
   - D. Poor
   - E. Negligible

4. How many patients per month on average do you refer to physical therapy:
   - A. 0-5
   - B. 6-10
   - C. 11-15
   - D. 16-20
   - E. >20

5. What percentage of your current patient load is receiving physical therapy:
   - A. 0-5%
   - B. 6-10%
   - C. 11-25%
   - D. 26-50%
   - E. >50%

6. Of the patients you refer to physical therapy, what percentage demonstrate your expected outcomes:
   - A. 0-25%
   - B. 26-50%
   - C. 51-75%
   - D. 76-100%

7. How much time was devoted to coverage of physical therapy at your medical school:
   - A. Not covered in school
   - B. 1-5 hours
   - C. 6-10 hours
   - D. >10 hours

8. Which avenue would be the most effective for increasing physician awareness of physical therapy services:
   - A. Inservices by physical therapists
   - B. One on one communication
   - C. Literature
   - D. Medical school
   - E. Interdisciplinary research

Please continue on the following page.

The following statements describe services provided by physical therapists. Please indicate your awareness and utilization of physical therapy by placing a check mark under the appropriate columns.

I am aware that P.T.s are ***trained*** to:		I ***utilize*** P.T.s to:
_____	1. Assess, debride and dress wounds and burns	_____
_____	2. Evaluate musculoskeletal problems	_____
_____	3. Mobilize hypomobile joints	_____
_____	4. Assess gait and balance disturbances	_____
_____	5. Use EMG equipment to aid in muscle re-education	_____
_____	6. Prescribe endurance/fitness/conditioning programs	_____
_____	7. Assess joint integrity and stability	_____
_____	8. Apply traction to patients with certain spinal dysfunctions.	_____
_____	9. Apply TENS units to aid in pain control (e.g. arthritis, OB, etc.)	_____
_____	10. Perform functional capacity evaluations	_____
_____	11. Fit patients with orthoses for various diagnoses (e.g. pes planus, foot drop, etc.)	_____
_____	12. Design and implement work hardening program	_____
_____	13. Perform active and passive range of motion exercises to prevent contractures and adhesions after surgery or trauma	_____
_____	14. Treat thoracic outlet syndrome	_____
_____	15. Help control spasticity in MS patients	_____
_____	16. Assess muscle tone in infants and children and develop programs to facilitate normal tone	_____
_____	17. Decrease pain associated with Reflex Sympathetic Dystrophy	_____
_____	18. Develop programs aimed at maximizing the functional level of CVA patients	_____
_____	19. Treat incontinence conservatively by way of strengthening pelvic floor musculature	_____
_____	20. Utilize soft tissue mobilization to decrease pain and spasm associated with various pathologies (e.g. fibromyalgia)	_____
_____	21. Treat temporomandibular joint dysfunction	_____
_____	22. Utilize the tilt table to treat orthostatic hypotension.	_____
_____	23. Aid in the selection and proper fitting of wheelchairs, walkers, crutches and other assistive devices	_____
_____	24. Apply intermittent pneumatic compression devices (Jobst) for control of edema	_____
_____	25. Develop and implement cardiac rehabilitation programs	_____
_____	26. Apply antiinflammatory agents via iontophoresis	_____

Did this survey inform you of physical therapy services you were previously unaware of that you may utilize in the future? ☐ Yes ☐ No

Thank You!

REPORT OF ACTION: EXEMPT/EXPEDITED REVIEW

University of North Dakota Institutional Review Board

DATE: July 24, 1997 **PROJECT NUMBER:** IRB-9707-012

NAME: Gavin Green & Cathy McMahan **DEPARTMENT/COLLEGE:** Physical Therapy

PROJECT TITLE: Physical Therapy Knowledge and Referral Patterns of Physicians in Wyoming and North Dakota

The above referenced project was reviewed by a designated member for the University's Institutional Review Board on July 25, 1997 and the following action was taken:

☐ Project approved. **EXPEDITED REVIEW** No. _____.
Next scheduled review is on _____.

☒ Project approved. **EXEMPT CATEGORY** No. 2. No periodic review scheduled unless so stated in the Remarks Section.

☐ Project approved **PENDING** receipt of corrections/additions. These corrections/additions should be submitted to ORPD for review and approval. **This study may NOT be started UNTIL final IRB approval has been received.** (See Remarks Section for further information.)

☐ Project approval **deferred. This study may not be started until final IRB approval has been received.** (See Remarks Section for further information.)

☐ Project **denied.** (See Remarks Section for further information.)

REMARKS: Any changes in protocol or adverse occurrences in the course of the research project must be reported immediately to the IRB Chairperson or ORPD.

cc: R. Mabey, Adviser
Dean, Medical School

Signature of Designated IRB Member
UND's Institutional Review Board

July 25, 1997
Date

If the proposed project (clinical medical) is to be part of a research activity funded by a Federal Agency, a special assurance statement or a completed 310 Form may be required. Contact ORPD to obtain the required documents.

(3/96)

REFERENCES

1. Uili R, Shepard KF, Savinar E. Physician knowledge and utilization of physical therapy procedures. Phys Ther. 1984;64:1523-1530.
2. Kerssens JJ, Groenewegen PP. Referrals to physiotherapy: the relation between the number of referrals, the indication for referral and the inclination to refer. Soci Sci Med. 1990;30:797-804.
3. Ward AWM, Williams BT, Dixon RA. Physiotherapy: its prescription and implementation for orthopaedic out-patients. Rheumatology and Rehabilitation. 1978;17:14-21.
4. Physician Directory. Cheyenne, Wyo: Wyoming Board of Medicine; 1997.
5. Statistical Package for the Social Sciences. Release 6.1 standard version. 24 June 1994.
6. Shepard K, Yeo G, McGann L. Successful components of interdisciplinary education. Journal of Allied Health. 1985;8:297-304.
7. Ellis J. New course on physical therapy educates medical students about the profession. Phys Ther Bull. May 1997.